metre of gas at the highest exhaustion to which these experiments have been carried. Two hundred and fifty billions of molecules in a cubic centimetre appear a sufficiently large number to justify the supposition that when set into vibration by a white-hot wire they may be capable of exerting an enormous mechanical effect.

January 24, 1878.

Sir JOSEPH HOOKER, K.C.S.I., in the Chair.

The presents received were laid on the table, and thanks ordered for them.

The following papers were read:—

I. "New Determination of the Mechanical Equivalent of Heat." By J. P. JOULE, LL.D., F.R.S. Received November 15, 1877.

(Abstract.)

An account is given by the author, of the experiments he has recently made, with a view to increase the accuracy of the results given in his former paper, published in the "Philosophical Transactions" for 1850. The result he has now arrived at, from the thermal effects of the friction of water, is, that taking the unit of heat as that which can raise a pound of water, weighed in vacuo, from 60° to 61° of the mercurial thermometer; its mechanical equivalent, reduced to the sea-level at the latitude of Greenwich, is 772·55 foot-pounds.

II. "The Cortical Lamination of the Motor Area of the Brain." By BEVAN LEWIS, F.R.M.S., Pathologist and Assist. Med. Officer to the West Riding Asylum, and HENRY CLARKE, L.R.C.P. Lond., Med. Officer to the West Riding Prison. Communicated by D. FERRIER, M.A., M.D., F.R.S., Professor of Forensic Medicine, King's College, London. Received November 7, 1877.

[PLATES 1–3.]

Whilst pursuing certain investigations upon the comparative histology of the brain, the authors of this article have been enabled to demonstrate certain facts with regard to cortical lamination, and to show the disposition and significance of certain elementary constituents, the importance of which, they believe, justifies their publication.